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ABSTRACT

To assist low achieving students in the mastery of instructional objectives in major subject areas, the Ministry of Education of Israel published definitions of Minimum Achievement Requirements (MAR) for specific subjects at all grade levels. To examine the feasibility of the MAR approach and to determine whether it contributed to the attainment of the stated goal, three short duration, focussed studies were conducted. The first demonstrated that, given a brief explanation, teachers can define MARs and focus their teaching on these items. The second study demonstrated that centrally defined MAR specifications, if adequately communicated, did affect the selection of topics for teaching. The third study demonstrated that even under highly favorable conditions, teacher willingness to teach MAR objectives in the class did not eliminate the problem of low achieving learners. (Author/BZ)

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MINIMUM ACHIEVEMENT REQUIREMENTS AS A FOSTERING DEVICE FOR LEARNERS FROM DISADVANTAGED SOCIAL STRATA

by

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Abstract

To ensure that low achieving students should master instructional objectives in major subject areas, the Ministry of Education of Israel published definition of Minimum Achievement Requirements (MAR) for each particular subject at a given grade level.

To examine the feasibility of the MAR approach and to find out whether it contributed to the attainment of the above mentioned aim, three short duration, focussed studies were carried out.

The first stufy demonstrated that given a brief explanatory document teachers can define MARs and focus their teaching on these items. The second study demonstrated that centrally defined MAR specifications, if adequately communicated, did affect the teachers' selection of topics for teaching. The third study demonstrated that even under highly favourable conditions, the teachers' willingness to teach MAR objectives in the class did not eliminate the problem of low achieving learners. Approximately 40 percent of the learners failed to master MAR objectives.

The Minimum Achievement Requirement (MAR) concept has its roots in common sense pedagogy. Good educators have always been aware of their commitments to all students including weakest ones. Some pupils always fail to master all the skills and knowledge considered worthwhile in a particular society. Good educators did not disregard the educational needs of these children. They strived to find what kind of knowledge was most helpful for these children to succeed in life and taught them accordingly.

The Hebrew author Y. Burla provided a touching example of an educator who was highly committed to all his students. The hero of his book "The Adventures of Aqavyah" was a slow learner. When Aqavyah celebrated his Bar Mitzvah, he was required, according to the local custory, to deliver a speech to the members of the community. Despite his teacher's efforts, Aqavyah was unable to memorize the text. Finally the teacher came up with an innovative solution. He wrote a Bar Mitzvah speech in the form of a dialogue. The teachers spoke and asked the child questions. Aqavyah had to answer "yes" or "no" to the questions. This is one of the most simple, naturalistic examples of the Minimum Achievement Requirement (MAR) concept.

It is interesting to note, that the rationale of such spontaneously generated non-formal MAR programmes lies in the acceptance of human variability. In contrast, the rationale of the modern, staturoty MAR programme is related to the principle of equality or equal rights.

The MAR concept has recently been adopted in several educational systems. The terms used and the ideas referred to differ from country to country or from one state to another. Most contemporary MAR programmes in the USA comprise studies in basic skills, communication skills, daily life skills, etc. (Gorth 1979). In most European countries, and also in Israel, the programmes encompass broader areas of disciplinary knowledge. They contain content elements, which are considered to be the common core of the cultural heritage of a society (Van Bruggen 1985). MAR programmes of this type constitute an abbreviated version of the regular school syllabus.

Requests to provide legitimacy for such abbreviated or "diluted" curricula emerged for various reasons. For example in Israel in the early 1960s such requests were put forward by the teachers. They realized that the majority of

children who immigrated from underdeveloped countries, were not able to cope with the demands of the national curriculum. They therefore wanted permission from the central educational authorities to teach a more limited set of topics in classes because they had a substantial proportion of such immigrant children! As a matter of fact they acted as the teacher of Aqavyah. Their claim was: let us teach less materials, and then our pupils will know more (Lewy 1985).

The generation of MAR programmes received additional impetus from the alarming reports about the achievement-decline of school children (Lipsitz 1977). An age-old problem dating back to the days of Plato is today's youth are not as well educated as the previous generation's. Nevertheless, the scientific flavor whih characterised these achievement-decline reports and the great publicity they received has given them high credibility. Educational systems were pressed to improve the situation and revitalized the MAR principles of comón sense pedagogy: those who have difficulty mastering complex educational objectives will do better if they focus on simpler ones.

In addition to widespread public demand to set MARs for school children, interesting developments in curriculum evaluation acted as a catalyst for the support of MAR programmes. (At the early phases of the American scientific curriculum development movement (Kliebard 1985) it was claimed that the quality of instructional materials should be judged on whether their users mastered the objectives of the programme. The concept of "learner verification" of instructional materials (EPIE 1980) operated on this principle: that curriculum materials were valid only if x percent of learners attained mastery of at least y percent of the programme objectives. The early documents of the American Association for the Advancement of the Science (AAAS) substituted the x in the above formula with the figure 90, and claimed that users of their materials achieved this remarkable result. Nevertheless, the x was gradually substituted with smaller numbers, such as 80,70 and even 60.

Curriculum Development Centres, which in their early years were able to match the remarkable results of AAAS programmes graduaaly produced less and less encouraging results with new instructional materials. The principle of "90 percent students mastering 90 percent of the objectives" became a myth, or at

least an ideal, which has seldom been observed in reality. Curriculum evaluation experts were embarrassed to realize that instructional materials did not stand the test of "x percent of persons mastering y percent of the objectives." This principle bailed even if one inserted figures lower than 90 into the indicated formula. These circumstances motivated some curriculum experts to suggest that there was a need to define differential achievement requirements for children of various ability levels. They also suggested that the expected achievement level of the lowest ability group of students studying at conventional schools should be acknowledged as MAR. It is hoped that if tests are produced to examine the mastery of MAR objectives only, then learners will demonstrate a statisfactory mastery of relevant objectives.

In summary, the following four reasons provided support for legitimizing MAR progrmmes:

1) The simplicity of the common sense pedagogy, which acknowledged human variability and claimed that some children could only acquire a very limited amount of knowledge.

2) The alarming reports by the mass media about declining achievement standards.

3) The failure of curriculum evaluation experts to prove the validity of innovative instructional material.

4) The strong support from American educational leaders for this idea. The successful diffusion of MAR programmes reinforced the arguments of the supporters and dampened the voices of those against it.

In an attempt to ensure that low achievement learners should be able to master significant learning objectives in major subject areas, the Israel Curriculum Centre published a series of supplementary documents to the existing syllabuses[2]. These documents contained items included in the national curricula, and were earmarked as Minimum Achievement Requirements for each particular area. Most documents contained explanations about the rationale of selecting the MARs. They also contained guidelines about focussing on MAR objectives in classes, which have a large proportion of low-ability learners.

Following the publication of these documents, short in-service training courses were held for teachers who would implement these programmes in their classes, and for school inspectors to monitor the implementation of the programmes. Later, at the initiative of the Israel Curriculum Center, several textbooks geared towards the needs of low-achieving subgroups were produced. MAR topics and objectives received special emphasis in these books.[3]
The successful completion of this paperwork raised questions about the feasibility of their implementation in the system. Their ability to change the situation and solve the problems was questioned.

Were these documents simply well-prepared elegantly-decorated "menu cards" (which did not tell too much about the quality of the food), or alternatively, were they practical guidelines for implementating changes in the school curricula .

At the initiative of the Israel Curriculum Center, a series of studies were launched to examine the impact of these documents, and of MAR in general. Some of these studies were Masters Theses at Israeli Universities. In the following section of a brief summary of three such studies is presented.

Three Empirical Studies.

The studies summarized here examined the feasilibity and effectiveness of MAR programmes launched by the Israel Curriculum Center. They have some common characteristics, but differ from each other in several important ways. All were carried out in naturalistic classroom settings, with minimal intervention in the work of the teacher. There is some variation in the studies regarding the degree of intervention by the researchers. The studies also focussed on a seventh grade history course, and two focussed on a single unit of 14 lessons of that course.[4] The differences were: two of the studies were short-duration, focussed studies: the third was spread out over an academic year. Two of the studies used a non-control group design, and one employed an experimental-control-group design. In two studies a special textbook representing the MAR approach was used. The central themes occupied more than 60% of the textbooks. By contrast, the third study used a regular textbook. It's core materials occupied about 30-35% of the textbook. The language of the book and the treatment of each particular idea was relatively sophisticated.

Study No. 1: Explaining the Principles of MAR to Teachers.

The study aimed to find out whether an explanation to teachers of the importance of setting MAR, and the implementation of a series of exercises to define MAR would affect their work in class.

More specifically, the following questions were asked:

- Would teachers restrict classwork to MAR topcis, or at least would they give preference to these topics?

- Would teachers devote sufficient time to MAR topics, and would they treat such topics with an adequate level of depth?

- When teaching MAR topics, would the teachers avoid "wandering" and getting lost in irrelevant and non-related details?

Methods and procedures.

A team of two curriculum experts visited seven classes in which a new history textbook was introduced. The bool had an important innovative feature. It was written in simple language and treated topics with a relatively low level of complexity. Indeed it was developed for use by children of disadvantaged social strata. The core materials, as indicated by the authors, occupied approximately 60% of the whole volume of the book. The rest comprised further elaborations on core topics and a smaller section on extension topcis or enrichment materials. Acting as change-agents, the experts explained the salient features of the new textbook to the teachers and drew their attention to the importance of defining MAR topics for teaching. The experts demonstrated the process of defining MAR, and carried out some relevant exercises with the teachers.

They subsequently visited the classes and prepared descriptive records about each lesson. They produced 38 class-visit records.

The curriculum experts drew up a list of what, in their opinion, constituted MAR in the particular study unit. They then divided the classroom records into teaching episodes. Altogether 120 episodes were identified , i.e. an average of 3.2 episodes per lesson. The experts ascertained whether the topic of each particular episode was included in the list of MAR they had drafted. In addition, they rated each episode on two four-level scales. The first scale referred to the comprehensiveness of the treatment and the levels were: (1) mentioned by the teacher or reference to the text by the teacher; (2) the

teacher explained it, but no reaction on behalf of the learners was elicited; (3) the teacher's explanation was followed by a question and answer session; (4) a thorough discussion took place.

The second scale which was rated was "keeping to the point", and the levels were: (1) frequent deviations from the main topic to issues which did not contribute to understanding (2) frequent deviations, but to issues which could support the comprehension of the main topic (3) bried and non-frequent deviations to partly related topics (4) focussing on the major topic. The details of the study are reported by Wolff and Padua (1985).

Results.

The major finding of this study is summarized in table 1.

Table 1. Focussing on MAR Topics

Class	No. of class visits	MAR topics	Non-MAR topics	3 - 4 level * comprehensiveness
1	8	18	6	61
2	3	7	3	-
3	6	16	4	25
4	5	13	6	39
5	6	18	5	61
6	5	8	2	75
7	5	13	1	85
All	38	93	27	48

* This column indicates the percentage of MAR topics, which were treated at 3 - 4 levels of comprehensiveness.

As indicated by the figures of table 1, 77 percent of the topics covered in the classs were contained in the list of MAR topics. Still, one finds substantial differences among teachers focussing on MAR topics. Some teachers (like that of class 7) dealt almost exclusively with MAR topics. Others (like teachers in class 2 and 4) dealt with a relatively high amount of non-MAR topics. There is a very high variation in the comprehensiveness of the treatment of the MAR topics. The teachers in class 7 dealt with most MAR topics at a high level of intensity, while the teacher in class 2 dealt with none of the MAR topics at a high level of intensity.

In terms of deviations from the main topics (the second dimension rated), only 4% of all episodes displayed very frequent deviations (level 1), 21% of the episodes had some justified deviations (level 2 and 3), while 75% of the episodes showed by a strong focus on the major topic.

Conclusions

The results of study no. 1 support the feasibility of implementing the MAR approach in content-related subject fields. It is possible that the textbook itself was a sufficient guide for the teachers since 60 percent of it was devoted to MAR topics. The fact that the percentage of MAR topics among classroom episodes was higher than in the textbook suggests that most teachers do not need much training or extensive persuasion to keep to MAR topics. Still, some teachers may need more stimulation than provided within the framework of this study. In summary, the figures presented in table 1. suggest that the focussing on MAR is widely practiced in teaching. Indeed, it is in harmony with principles of common sense pedagogy.

Study no 2: Centrally Produced List of MAR Topics

Background and purpose.

In Israel and countries with centralized educational systems, the major parameters of the school curriculum are determined by the central educational

authorities. Curriculum documents are produced by various agencies of the central authorities. The power of local authorities and school staff to make curricular decisions depends on the consent of the central authorities. It should be noted that even in decentralized educational systems the implementation of minimum competency programmes strengthened the power of the central decision making (Van Bruggen 1985). No wonder, therefore, that when the demands were voiced, to set MARs for each subject area in Israel the central educational authorities delegated the task of defining MARs to the National Curriculum Center. The subject matter curriculum committees were invited to produce a document containing the detailed specification of MARs for each grade level.

In the face of this commonly approved decision-making and communication pattern, it was interesting to find out:

-to what extent centrally produced lists of MAR topics affect the outcome of teaching. In more specific terms, to what extent do they increase the chances of low achievement learners mastering those curricular objectives included in the MAR list.

Methods and procedures.

The curriculum team which developed the history textbook for grade seven, produced a document listing MAR requirements for the 14 lesson curriculum unit used in study no.1. This work was a first step in providing a series of MAR lists for all curricula units in the textbook. This document was presented to 10 teachers who taught seventh grade history. It should be remembered that in this case, the textbook focussed on core topics only, and represented the MAR principle. Again, since the textbook represented an innovative approach to teaching history, a team of two curriculum experts monitored the implementation of the new approach. During continuous contact between teachers and curriculum experts, the MAR document was studied on several occasions. The importance of ensuring, that even low achieving learners should master the MAR items, was strongly emphasized.

The team of two curriculum experts compiled two tests to examine the mastery of MAR topics. One 28-item test examined the mastery of MAR content-elements of the programme, and the other 36-item test examined the mastery or syntax ("methods of inquiry") elements unique to studying history (Schwab 1973). This second test contained items examining the comprehension of cause and effect relationships, of utilizing historical sources in order to learn about the past, etc.

Results.

The distribution of the correct responses to the two tests are presented in table 2.

Table 2. Distribution of test scores percentage

Percentage of correct responses	Content test	Syntax test
91 - 100	67.0	20.3
81 - 90	19.1	31.4
71 - 80	6.7	24.0
61 - 70	5.1	11.3
- 60	5.1	13.3
All	100.0	100.0
Number of cases	313	300
Mean	90.0	77.5
SD	12.8	13.9

The test results were relatively high, and exceeded the level commonly obtained in routinely administered achievement tests. The results of the content-test are particularly high: 64 percent of the pupils scored higher than 90% correct responses. Even the syntax test results, with and average of 77.5 percent correct responses, is very impressive. Indeed, when the teachers caught a glimpse of the items before administering the test, their reaction was: Is this all you want to ask us? The teachers expressed slight indignation and suggested that they usually prepared more difficult tests. While the mean scores are very impressive, one's comment examining the pattern of the score distribution tends to be less optimistic after. Even in such an

easy test, which the teachers judged underestimated the level of actual knowledge of pupils, a substantial proportion of learners scored below 70 percent.

Conclusions.

What do the results in table 2 suggest about the feasibility of teachers using centrally developed lists of MAR topics?

The high average score obtianed in the tests suggest, that these lists effectively direct the teachers' work toward dealing with the core topics of a course study. In this respect the findings of the study produced results congruent with those reported in the study no. 1. Nevertheless, if one considers the major purpose of producing the MAR lists, i.e. ensuring that even low achievers should master the basic ideas of a course, then the results point toward a failure. More than 10 percent of the learners had not mastered a 70 percent correct response regarding the content elements of the programmes. About 24 percent had not obtained a 70 percent mastery of the syntax topics. Even if a cut-off line of 60 percent correct responses is used (considered a very lenient indicator of mastery), substantial proportion of the students failed.

Moreover, a clinical examination of the level of knowledge of low achieving students revealed that even those who recorded a 70 percent correct response did not properly understand the topics in the test-items. The team of experts conducted follow up interviews with a group of low achieving learners and among them were pupils who had scored higher than 70 percent in the test. They found that in many cases the pupils knowledge was of an associative type. They could answer particular questions, but failed to grasp a sound overview of structure of the content, the sequence of the events and the relationship between them. Their knowledge constituted disjointed bits of information, memorized through associative clues, without adequate comprehension of their real meaning.

Study no. 3: A collaborative Study of Curriculum Experts and Teachers.

Background and purpose.

In the last few years the notion of teacher involvement in curriculum development, school based curricula, school autonomy etc., gained momentum in curriculum theory and practice (Skilbeck 1976; Silberstein 1985). In wake of these ideas collaborative curriculum studies were launched. Expert researchers and teachers co-operated as equal partners in the research (Dockrel and Hamilton 1980). Little wonder that requests were put forward, both on behalf of researchers and of teachers, to carry out collaborative studies about implementing Minimum Requirment Programmes (MAR) in various subject areas. Such requests were strongly supported by concepts generated in the Israel Curriculum Centre (ICC). These concepts suggested that Minimum Achievement Requirements (MAR), should not be uniform for all learners in an educational system, but should rather be defined separately for various ability level pupils. Moreover, it was argued, that MAR should not be applied to the individual learner but to the whole educational system. It was also argued that they should be defined in terms of distribution curves of achievement scores rather than in terms of a cutting line score (Lewy 1983). Such a definition of MAR could determine whether and how the implementation of MAR programmes had affected the shape of the overall score distribution in a particular system. In other words, it could provide evidence whether or not raising the attainment level of low achieving learners had been accompanied by loss of excellence.

These considerations constituted background for a decision to carry out a collaborative study in which the teachers (aided by curriculum experts) set MAR for their classes and examined the consequences.

In other words the study examined:

- the feasibility of setting specific MARs for various courses of study, and
- the effectiveness of such action in attaining the aims of MAR programmes, i.e. to increase the chances of low-achieving learners to master MAR objectives.

Methods and procedures.

A collaborative study of curriculum experts and teachers was lanuched at the initiative of the In-service Training Department, School of Education, Tel-Aviv University. The formal framework of the study was a credit course of the Department, which was announced as "Teaching Seventh Grade History: Problems and Techniques". Teachers actually teaching seventh grade history could apply for admission to the course. The tuition fee for the course was fully covered by a grant from the Israel Curriculum Centre. Seventeen teachers were admitted to the course (out of 42 applicants) and one dropped out. The students met fortnightly for a four hour session. Altogether 14 such four-hour meetings took place during the year. During the course various issues related to teaching history were discussed, but the major topic was introducing the concept of Minimum Achievement Requirements (MAR). The techers were consulted. Since the teachers came from schools representing various general educational achievement levels, small sub-groups of teachers from relatively similar achievement-level schools were formed. Each sub-group examined the textbook separately and worked jointly to define MARs for their pupils. This work required frequent small group meetings between the teachers, mutual visits in classes, joint planning of interim examinations, and joint scoring of examinations papers. The textbook used by the teacher in this study contained a richer and more extensive set of instructional materials than that used in the previously described two studies. The textbook also used an advanced level vocabulary and treated various topics thoroughly with an analytical depth. The core material, which should be considered for MAR programmes, did not occupy more than 30-35 percent of the book. All relevant activities of the teachers were monitored by the course teacher who also summarized the findings of this collaborative study (Shamir 1985).

Towards the end of the school year the curriculum experts monitoring the course compiled a multiple choice test. Te items related to those MAR topcis which appeared in the lists produced by all sub-groups of teachers. The test was compiled form an item bank kept by the Israel Curriculum Centre and from interim tests used by various teachers in their own classses. To avoid a heavy burden of testing, the item were grouped into two parallel tests; and each pupil only responded to one test. Altogether 898 pupils taught by 17 teachers in the course (some teachers taught in several parallel classes), took the examinations. In addition, 270 pupils taught by teachers who did not participate in the course, took the same examination. This latter group served as a control group.

A questionnaire was also administered to the teachers participating in the study. They were invited to comment on their experience in the course and in the class, and describe the impact of the course on their class-work. A group discussion was carried out, in which teachers described their attituted toward the course, and the benefits they gained from participating in the course.

Results.

The results obtained in the tests are presented in table 3. Since the results of the two parallel tests were similar, it seemed sufficient to report the findings of the first test only.

Table 3. Distribution of the scores (percentage of students)

The score (raw)	Study group	Control group
26-30	30	11
21-25	32	37
16-20	22	26
11-15	13	13
5-10	3	6
All	100	100
Mean	21.0	20.3
SD	5.2	5.4
No. of persons	435	138

The results in table 3 (as calculated by intrapolation) indicate that approximately 62 percent of the study group pupils and 48 percent of the control group pupils scored 70 percent (or more) correct responses. These results are considerably lower than those obtained in study no.2. The difference can be partly attributed to differences in the level constructing items for measuring the attainment of MAR objectives. It is likely however that the actual attainments in this study are far below those attained in study no. 2.

The continuous interaction between teachers and experts increased the teachers' ability to define appropriate MARs for their students. At the beginning of the school year teachers were dominated by the content of the textbook and acted as though everything in the textbook should be considered a MAR topic. Toward the end of the school year they were more willing to gloss over topics and consider time and ability factors when drafting a list of MARs

for their class. The collaborative activities strengthened the teachers' confidence to assume responsibility for class-related curricular decisions. The activites increased the curriculum experts' insights into the difficulties teachers encounter in adapting a textbook to the needs of pupils in their class.

The teachers' attitude toward the course was very favourable. Their satisfaction with the course was demonstrated by regular attendance, active participation and immediate application in their class of the skills acquired from the In-Service Training course. Indeed, the teachers reaction to the cours was additional evidence for the claim made by Yarger (1985), that in-service training has strong a effect on the teachers' behaviour if they are able to implement newly acquired ideas and skills in their course, immediately.

The teachers indicated that the course had an impact on their approach to teaching history and other subjects. They said the course improved their ability to plan a lesson, to clearly define objectives, to be critical of the textbook and to select instructional materials which suited the context of their work. Moreover, in describing the benefits they gained from the course, the teachers indicated that due to their improved skills, they received greater enjoyment teaching the subject and their pupils revealed greater interest in their studies.

Conclusions.

A collaborative study of teachers and currilum experts aimed at introducing the MAR approach to the classes of the participants had encouraging results. Teachers gained confidence in deciding what to teach in their class. They also improved their skills in adapting curriculum materials to the particular needs of their class. The collaborative study proved to be an excellent instrument to develop professional skills and to increase work satisfaction. Nevertheless, one of the major aims of the MAR approach was not attained. A substantial proportion of the learners did not gain satisfactory mastery of MAR topics.

Teachers are evidently inclined to consider the learning needs of average and above average learners in their classes (Lundgren 1985). Thus, in selecting MAR topics, and pacing the learning, the progress of these pupils serves as a basis for the teachers decisions. Under these cirumstances the learning needs of the weakest sub-group in the class are not addressed. The implementation of MAR may ensure that average and above average learners will master a prescribed set of objectives: it does not seem to solve the problem of learners whose failure gave impetus for the MAR approach in the first place.

Synopsis of Conclusions

The decision to define Minimum Achievement Requirements (MAR) for major subjects at each grade reflects a deep concern for the low achievement level of many primary and secondary school pupils. It was hoped that MARs would enable teachers to focus on the core of various subjects and thereby enable the weaker learners to master a carefully selected set of objectives.

The results of three empirical studies which examined the feasibility and the success of applying the MAR approach were reported in this paper. Feasibility was defined in terms of the teacher's approval of the MAR approach and its implementation in classes. Success was defined in terms of level of mastery of the MAR objectives by the target population and especially the "weak" substratum of the learners.

The three studies provided evidence of the feasibility of applying the MAR approach to a seventh grade History course. The teachers did not question the adequacy of this approach and willingly and skillfully implemented it in their classes. They did this without questioning whether the approach was a centralistic-prescriptive measure of the educational authorities or a collaborative endeavor of teachers and experts. The principles of MAR have an appeal to the common sense pedagogy of the teachers. Teachers believe that focussing on limited set of learning objectives or on a reduced set of content units will ensure that even "weak" students will know what they are requested to know. Teachers are ready to accept a prescribed set of MAR objectives from the educational authorities and focus their work on the attainment of these

objectives. Teachers are also willing to be involved in defining MARs collaboratively with experts. Moreover, the teachers' skills in defining adequate MARs and their satisfaction from doing this, increase after receiving relevant training and experience. Teachers perceive their involvement in defining MAR as a rewarding activity and think this gives them a deeper understanding of the subject they have to teach. They also develop skills to distinguish between what is important and what is marginal in their texts.

It is interesting to note that teachers felt equally at ease with MARs with highly "condensed" textbooks (which were purposefully written for "weak" learners and contained a reduced set of contents) and with regular textbooks, which contained more elaborated contents and a broad selection of enrichment materials.

Regarding the success of the MAR approach to ensure that even the "weak" learners attain a satisfactory level of knowledge, the results are more equivocal. Study no. 2 found that if one applied the criterion of 70 percent correct responses to test items, then approximately 90 percent of the learners "pass" the content test, and 75 percent "pass" the syntax test. The results do not fully meet the expectations of those who argued for introducing the MAR approach. They expected that these "easy and simple" objectives would be mastered by almost everybody. Nevertheless, these results are fairly impressive and one is inclined to believe that they constitute a realistic limit for what can be attained. The results of study no. 3 however, are rather disappointing. Only 62 percent of the learners studying with the MAR approach reached the passing level of 70 percent correct responses. This compared with 48% percent of learners in the control group. While the results on the MAR group are better than the control groups, the absolute "passing" mark figures are rather low.

The comparison of the two studies suggests that results may be close to ideal standards when MARs are set by an external authority than when they are set by teachers themselves. External authorities with experience in setting MARs and examining results develop a sense for what can be expected and accordingly set realistic standards. On the other hand, teachers have difficulty in accepting that some of their students will learn less than what they see as a minimal level of knowledge.

One should of course remember that teachers participating in the collaborative study described here encountered MAR for first time in their teaching career. It may well be that after accumulating experience with the MAR principles, they develop more realistic standards which in turn may lead toward better results.

It may be both hasty and superficial however to attribute the low level of achievement to the teachers' lack of experience in applying MAR principles. It could well be that in teaching history and other subjects such as physics, biology, etc., the reduction of content leads to perfunctory repetition of verbal statements. Through such learning the pupils acquire disjointed bits of information which could help them respons to a multiple-choice test item. Such knowledge is associative and does not represent real understanding.

To impart meaningful knowledge of a core unit to learners, the teachers have to expand on content and explain it by presenting a variety of examples which illustrate the main idea of the core unit. Practically, it may mean that there is a need to develop instructional materials which elaborate on the meaning of the core topic. This implies that MAR teaching cannot be done throught the reduction of a given set of instructional contents. One should rather start with a definition of the core ideas and then create instructional materials which expand these core ideas, and examine them from different points of view.

In summary it should be said that the reasons for failure discussed here are speculative. The results of the studies do not provide hints about the validity of any particular reason. Nevertheless, for those who subscribe to the common sense pedagogy of MAR and believe that low achieving learners relieved of a highly demanding curriculum will be able to master most of their courses, the findings of these studies may be instructive. They show that specifying MAR objectives and reducing the quantity of contents do not guarantee that "weak" students will master what they are expected to know.

It seems likely, that in addition to defining MARs, the curriculum experts need to suggest teaching-learning strategies which will stand the test of empirical validation.

Notes

1. A series of small booklets was published by the Government Printing Office in 1962. The books were titled "Suggestions for a Parenthesis curriculum in Primary Schools" and each sported the name of the subject such as Mathematics, Geography, History etc. A separate booklet was published for each subject. The term "paranthesis" referred to the fact that the curriculum was derived from the National Curriculum. It suggested a way of putting into paranthesis several sections of the National Curriculum and eliminating obligatory set of learning materials. The booklets were revoked by the Ministry before they were distributed for two reasons: they were considered discriminatory towards certain social strata and secondly were not supported by experts in the psyschology of learning.

2. Examples of such documents are:
   (a) Concepts and Skills in Biblical Studies,
   produced by the team of the Bible Curriculum at the Israel Curriculum Centre, 1980, Mimoegraphed.
   (b) Content, Competencies, and Basic Skills in Biology Studies in Grades 7-8,
   produced by the team of the Biology Curriculum at the Israel Curriculum Centre, 1980, Mimeographed.

3. Textbooks built on the principle of emphasizing Minimum Achievement Requirements were produced at the Israel Curriculum Centre by teams of History and Biology Curriculum before the formal release of the MAR documents in these subjects.

4. The particular unit selected for observation was"The Jewish State in the first century B.C., and in the first century A.D. under the Yoke of the Roman Occupation". Two history textbook series were produced by the Israel Curriculum Centre. Both are planned to cover the prescribed curriculum. The first of these series has already been completed, and the second is still in the process of development. The second series is designed to meet the needs of children from disadvantaged strata. An attempt is made to focus on major issues. The language is relatively simple and the complexity of ideas has been kept low.

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